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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,150	12/29/2000	Stephan J. Jourdan	2207/7086	6534

23838 7590 02/11/2004

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EXAMINER	
MEONSKE, TONIA L	

ART UNIT	PAPER NUMBER
2183	4

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/750,150	JOURDAN ET AL.	
	Examiner	Art Unit	
	Tonia L Meonske	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

2. The oath or declaration is defective because:

a. Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). Specifically, the page numbers on the bottom of each page have been altered without being initialed and dated. Appropriate action is required.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claim13 is objected to because of the following informalities: In line 3, please change the limitation "a information field " to -- an information field --. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-26 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wang et al., Highly Accurate Data Value Prediction using Hybrid Predictors.

7. Referring to claim 1, Wang et al. have taught a method for predicting values in a processor having a plurality of prediction modes, comprising:

a. receiving an instruction at a first table (Page 288, Figure 6, A hashed instruction address is received at the VHT.);

b. generating a valid signal from said first table (Page 288, Figure 6 , "Prediction valid");

c. providing a prediction mode for said instruction (Page 288, Figure 6, The "state" field and the 2:1 MUX provide a prediction mode for said instruction.);

d. determining a hit in a second table according to a function of said instruction and said first table (Page 288, Figure 6, PHT is the 2nd table where a hit is determined according to a function of said instruction and said first table.); and

e. predicting a predicted value according to said hit and said prediction mode (Page 288, section 5.2, Figure 6, The 2:1 MUX predicts a predicted value according to the Hit and the "state" field.).

8. Referring to claim 2, Wang et al. have taught the method of claim 1, as described above, and wherein said predicting includes selecting said predicted value from said first table (Page 288, section 5.2, Figure 6, If the 2-level predictor does not make a prediction, then the predicted value is selected from the first table.).

9. Referring to claim 3, Wang et al. have taught the method of claim 1, as described above, and wherein said predicting includes selecting said predicted value from said second table (Page 288, section 5.2, Figure 6, If the 2-level predictor makes a prediction, then the predicted value is selected from the second table.).

10. Referring to claim 4, Wang et al. have taught the method of claim 1, as described above, and wherein said predicting includes selecting said predicted value from said first table or said second table according to said hit in said second table (Page 288, section 5.2, Figure 6, When the second table determines a hit the predicted value is selected from the second table. When there is not a hit in the second table, then the predicted value is selected for the first table.).

11. Referring to claim 5, Wang et al. have taught the method of claim 1, as described above, and wherein said generating includes matching a first table tag with said instruction (Page 288, section 5.2, Figure 6, The "Tag" field is matched with said instruction.).

12. Referring to claim 6, Wang et al. have taught the method of claim 5, as described above, and wherein said generating further includes accessing an information field in said first table correlating to said first table tag (Page 288, section 5.2, Figure 6, page 285, last paragraph, The Value History Pattern value is accessed from the first table.).

13. Referring to claim 7, Wang et al. have taught the method of claim 1, as described above, and further comprising placing said prediction mode in a shift mode (Abstract, Page 288, section 5.2, Figure 6, When the 2-level predictor makes a prediction, then the prediction mode is in a pattern mode, or shift mode.)

14. Referring to claim 8, Wang et al. have taught the method of claim 1, as described above, and further comprising placing said prediction mode in a count mode (Abstract, Page 288, section 5.2, Figure 6, When the 2-level predictor makes a prediction, then the prediction mode is in a pattern mode, or count mode.).

15. Referring to claim 9, Wang et al. have taught the method of claim 1, as described above, and further comprising placing said prediction mode in a stride mode (Abstract, Page 288,

section 5.2, Figure 6, When the 2-level predictor does not make a prediction, then the prediction mode is in a stride mode.).

16. Referring to claim 10, Wang et al. have taught the method of claim 1, as described above, and wherein said providing includes providing said prediction mode from said first table (Page 288, section 5.2, Figure 6, If the 2-level predictor does not make a prediction, then the predicted value is provided from the first table.).

17. Referring to claim 11, Wang et al. have taught the method of claim 1, as described above, and further comprising transitioning to said prediction mode from a previous prediction mode (Page 288, section 5.2, Figure 6, Page 284 and 285, section 3.2, The prediction mode transitions from Init, Transit, and Steady state modes.).

18. Referring to claim 12, Wang et al. have taught the method of claim 1, as described above, and further comprising indexing said second table according to said function and a subset of said instruction (Page 288, section 5.2, Figure 6, The PHT is indexed according to a function of a subset of the instruction.).

19. Referring to claim 13, Wang et al. have taught a multi-mode predictor in a processor, comprising:

a. a first table indexed by an instruction pointer (Page 288, section 5.2, Figure 6, VHT) and having table entries that includes a mode field (Page 288, section 5.2, Figure 6, "State" field) and a information field ();

b. a second table indexed by a function of said instruction pointer and said first table (Page 288, section 5.2, Figure 6, PHT); and

c. a hit condition in said second table that correlates to a predicted value of a prediction mode (Page 288, section 5.2, Figure 6, A hit condition in the PHT correlates to a predicted value of a prediction mode.).

20. Claims 14-16 do not recite limitations above the claimed invention set forth in claims 7-9 and are therefore rejected for the same reasons set forth in the rejection of claims 7-9 above, respectively.

21. Claims 17 and 18 do not recite limitations above the claimed invention set forth in claims 2 and 3 and are therefore rejected for the same reasons set forth in the rejection of claims 2 and 3 above, respectively.

22. Referring to claim 19, Wang et al. have taught a processor comprising:

a. a multi-mode predictor comprising a first table (Page 288, section 5.2, Figure 6, VHT) and a second table (Page 288, section 5.2, Figure 6, PHT), wherein said first table includes a plurality of entry fields (Page 288, section 5.2, Figure 6, VHT, "value history pattern" fields) and said second table includes a plurality of entry fields (Page 288, section 5.2, Figure 6, PHT), and having a plurality of prediction modes (Page 288, section 5.2, Figure 6, Pages 284-285, section 3.2, Init, Transient, and Steady modes.);

b. a set of instructions that index said first table to provide a signal (Page 288, section 5.2, Figure 6, "Prediction Valid" signal); and

c. a set of predicted values for said set of instructions (Page 288, section 5.2, Figure 6, Predicted values in VHT and PHT), said set of predicted values stored in said first table (Page 288, section 5.2, Figure 6, VHT) and said second table (Page 288, section 5.2, Figure 6, PHT).

23. Referring to claim 20, Wang et al. have taught the processor of claim 19, as described above, and wherein said multi-mode predictor further comprises a function that indexes said second table according to said set of instructions and said first table entry fields (Page 288, section 5.2, Figure 6, The PHT is indexed as a function of the set of instructions and the value history pattern entries.).

24. Referring to claim 21, Wang et al. have taught the processor of claim 19, as described above, and wherein said set of predicted values includes a first set of predicted values stored in said first table (Page 288, section 5.2, Figure 6, VHT), and a second set of predicted values stored in said second table (Page 288, section 5.2, Figure 6, PHT).

25. Referring to claim 22, Wang et al. have taught the processor of claim 21, as described above, and further comprising a hit condition in said second table that accesses said second set of predicted values (Page 288, section 5.2, Figure 6, An entry is selected from the PHT.).

26. Referring to claim 23, Wang et al have taught the processor of claim 21, as described above, and further comprising a miss condition in said second table that accesses said first set of predicted values (Page 288, section 5.2, Figure 6, When the 2-level predictor does not make a prediction, then the first set of predicted values are selected.).

27. Referring to claim 24, Wang et al. have taught a multi-mode predictor, comprising:

a. a first table, indexed by an instruction pointer (Page 288, section 5.2, Figure 6, VHT) and having first table entries (Page 288, section 5.2, Figure 6, VHT, "Value history Pattern" entries), each having a mode field (Page 288, section 5.2, Figure 6, "State" field) and a first prediction field result (Page 288, section 5.2, Figure 6, "Data values" field);

b. a function unit (Page 288, section 5.2, Figure 6, The decoder that selects a value from the PHT is the Function Unit.) having an input for instruction pointer data (Page 288, section 5.2, Figure 6, The output from the "Value history pattern" is the instruction pointer data) and coupled to said first prediction result fields of the first table entries (Page 288, section 5.2, Figure 6, The decoder is coupled to the Value history pattern fields.), and having an output for a calculated pointer (Page 288, section 5.2, Figure 6, The decoder outputs a pointer for the PHT.);

c. a second table indexed by the calculated pointer and having second table entries having second prediction result fields (Page 288, section 5.2, Figure 6, The pointer from the decoder selects a prediction result entries from the second table.); and

d. a selector (Page 288, section 5.2, Figure 6, 2:1 MUX), having a control input coupled to the mode fields (Page 288, section 5.2, Figure 6, The 2:1 MUX is coupled to the "State", or mode fields.) and data inputs coupled to the first and second prediction result fields (Page 288, section 5.2, Figure 6, the 2:1 MUX has data inputs coupled to the first and second prediction result fields.).

28. Referring to claim 25, Wang et al. have taught the predictor of claim 24, as described above, and wherein the first prediction result fields comprise a stride sub-filed (Page 288, section 5.2, Figure 6, "Stride" field) and a last value sub-field (Page 288, section 5.2, Figure 6, "Data Values" field).

29. Referring to claim 26, Wang et al. have taught the predictor of claim 24, as described above, and wherein the first table generates a signal indicating whether the instruction pointer hit the first table (Page 288, section 5.2, Figure 6, "Prediction Valid" signal).

Conclusion

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tonia L Meonske whose telephone number is (703) 305-3993. The examiner can normally be reached on Monday-Friday, 9-6:30.

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie P Chan can be reached on (703) 305-9712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlm

RICHARD L. ELLIS
PRIMARY EXAMINER